

Form 1C  
PCB CONGENER TEQ ANALYSIS REPORT

Lab Name: AXYS ANALYTICAL SERVICES

Sample Collection:

12-Jun-2003 09:40

Contract No.: 9952

Matrix: AQUEOUS

Lab Sample ID:

L5850-8

Sample Size: 0.938 L

GC Column ID(s):

SPB-OCTYL

Concentration Units: pg/L

Sample Datafile(s):

PB3C\_357 S:9

COMPOUND	IUPAC NO.	CO-ELUTIONS	LAB FLAG <sup>1</sup>	CONC. FOUND	DETECTION LIMIT	WHO 1998 TEF	TEQ	
							U=1/2 DL	U=0
3,3',4,4'-TetraCB	77		U		0.526	0.0001	2.63E-05	0.00E+00
3,4,4',5-TetraCB	81		U		0.489	0.0001	2.44E-05	0.00E+00
2,3,3',4,4'-PentaCB	105		U		0.216	0.0001	1.08E-05	0.00E+00
2,3,4,4',5-PentaCB	114		U		0.197	0.0005	4.93E-05	0.00E+00
2,3',4,4',5-PentaCB	118			2.55 UB	0.192	0.0001	9.6 E-6 2.56E-04	2.55E-04 0.00
2',3,4,4',5-PentaCB	123		U		0.203	0.0001	1.01E-05	0.00E+00
3,3',4,4',5-PentaCB	126		U		0.266	0.1	1.33E-02	0.00E+00
2,3,3',4,4',5-HexaCB	156	156 + 157	C U		0.181	0.0005	4.53E-05	0.00E+00
2,3,3',4,4',5'-HexaCB	157	156 + 157	C156					
2,3',4,4',5,5'-HexaCB	167		U		0.137	0.00001	6.83E-07	0.00E+00
3,3',4,4',5,5'-HexaCB	169		U		0.174	0.01	8.70E-04	0.00E+00
2,2',3,3',4,4',5-HeptaCB	170		Z					
2,2',3,4,4',5,5'-HeptaCB	180	180 + 193	Z				7.55E-7	
2,3,3',4,4',5,5'-HeptaCB	189			0.074 UB	0.0151	0.0001	2.40E-06	7.40E-06 0.00
2,3,3',4',5,5',6-HeptaCB	193	180 + 193	Z					
TOTAL TEQ							0.0146	0.000263 0.0000

(1) C = co-eluting congener; U = not detected; Z = compound not requested

(2) Concentrations that do not meet quantification criteria are not included in the TEQ calculations.

7241  
11/11/03

Form 1A  
PCB AROCLOR EQUIVALENT ANALYSIS REPORT

CLIENT ID:  
AN-EW50GW-030612

Sample Collection: 12-Jun-2003 09:40

Lab Name: AXYS ANALYTICAL SERVICES

Contract No.: 9952

Lab Sample ID: L5850-8

Matrix: AQUEOUS

Sample Size: 0.938 L

Sample Receipt Date: 13-Jun-2003

Initial Calibration Date: 19-Jun-2003

Extraction Date: 30-Jun-2003

Instrument ID: HR GC/MS

Analysis Date: 07-Jul-2003

Time: 5:27:14

GC Column ID: SPB-OCTYL

Extract Volume (µL): 22

Sample Datafile: PB3C\_357 S: 9

Injection Volume (µL): 1.0

Blank Data Filename: PB3C\_357 S:4

Dilution Factor: N/A

Cal. Ver. Data Filename: PB3C\_357 S:1

Concentration Units: pg/L

COMPOUND	CAS NO.	LAB FLAG <sup>1</sup>	CONC. FOUND	DETECTION LIMIT
Aroclor 1016	12674-11-2	Z		
Aroclor 1221	11104-28-2	U		1.06
Aroclor 1232	11141-16-5	U		1.31
Aroclor 1242	53469-21-9	5.0	15.0	2.27
Aroclor 1248	12672-29-6	U		2.41
Aroclor 1254	11097-69-1	U		1.47
Aroclor 1260	11096-82-5		3.59	0.158

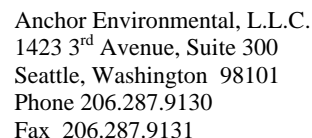
- (1) U = not detected; E = exceeds calibrated linear range, see dilution data; D = dilution data; Z = compound not requested; X = results reported separately  
(2) PCB Aroclor equivalents were calculated from individual PCB congener concentrations using empirically determined conversion factors.

*Rm*  
*11/19/03*

9139ARD1\_1.xls, S7

Approved by: *Rawsthorne* QA/QC Chemist

24-08-2003  
dd-mm-yyyy



1. **Holding Times – Acceptable.** All samples were analyzed within applicable holding times.

2. Blanks – Acceptable. The laboratory blank contained 9.4 pg/L of total PCBs and the trip blanks contained 14 and 21 pg/L of total PCBs. This is in the same range as the field samples. Data were both blank-corrected and qualified in Excel data summaries (application of UB qualifier).
3. Surrogates – Acceptable. . The laboratory noted that several C-13 labeled surrogates were below method criteria in this sample. Because the surrogate recoveries were in a range that Axys does not believe effects the sample results, no action was taken.
- 4.
5. Matrix Spike – Acceptable. Recoveries ranged from 91-118%.
6. Reporting Limits – Acceptable.
7. Notes – The laboratory noted that this issues discussed above relative to surrogate recoveries are not believe to effect the sample results. .

#### *Overall Assessment of Data*

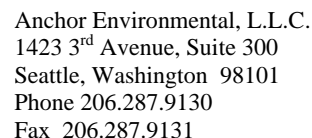
The completeness of Axys Analytical WG10228 is 100%. The usefulness of this data is based on USEPA guidance documents. Upon consideration of the information presented above, the data are acceptable and no flags or qualifiers are necessary beyond those applied due to associated blanks.

#### **Data Qualifier Definitions:**

- |    |   |
|----|---|
| U  | The analyte was analyzed for, but was not detected above the reported sample quantitation limit.  |
| UB | The analyte was detected, but was <5 times the level in an associated blank and was therefore qualified as not detected.  |
| J  | The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.  |
| UJ | The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. |
| R  | (Not used) The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.   |

#### **Laboratory Qualifier Definitions:**

- |    |   |
|----|---|
| Cx | Co-elutes with indicated congener. Data is provided under the lowest IUPAC designated congener in the group. "X" denotes the IUPAC number of the lowest congener. |
| K  | Could not be confirmed.   |
| U  | Not detected.   |



<b>To:</b>	Project File	<b>Info:</b>	Draft
<b>From:</b>	James Keithly, Chemist	<b>Date:</b>	March 2004
<b>RE:</b>	Summary Data Quality Review Upriver Dam RI – Water Data Axy's Analytical Services No. WG10229		

The laboratory provided a complete data report containing sample results and associated QA/QC data. The following samples are associated with Axys Analytical Services workgroup No: WG10229.

<u>COC Sample ID</u>	<u>Type</u>	<u>Requested Analyses</u>
AN-02B1SW-030902	Field	PCB congeners
AN-00SWRB-030902	Field	PCB congeners
AN-02BSW-030906	Field	PCB congeners
AN-03BSW-030906	Field	PCB congeners

Data validation is based on method performance criteria and QC criteria as documented in the Sampling and Analysis Plan (SAP). If criteria were not available in this document, method criteria or the laboratories' current criteria were used to evaluate the data. This abbreviated data review included a review of summarized sample results and QA/QC data per the requirements set forth in the QAPP. Holding times, method blanks, laboratory control sample results, laboratory duplicate results, field duplicate results, and reporting limits were reviewed to assess compliance with applicable methods and the QAPP. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA documents *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review* and using *EPA Region 10 SOP for Validation of Method 1668Toxic, Dioxin-like, PCB Data*.

Samples were analyzed for PCB congeners by the EPA Method 1668.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.
2. Blanks – Acceptable. The laboratory blank contained 63 pg/L of total PCBs and the field blank (00SWRB) contained 116 pg/L of total PCBs. This is in the same range as the field samples. Data were both blank-corrected and qualified in Excel data summaries (application of UB qualifier).

3. Surrogates – Acceptable. The laboratory did not note any recoveries of C-13 labeled congeners that fell outside limits.
4. Matrix Spike – Acceptable. Recoveries ranged from 87-100%.
5. Reporting Limits – Acceptable.
6. Notes – The laboratory noted no analytical issues with these samples.

#### *Overall Assessment of Data*

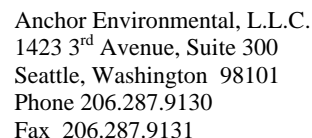
The completeness of Axys Analytical WG10229 is 100%. The usefulness of this data is based on USEPA guidance documents. Upon consideration of the information presented above, the data are acceptable and no flags or qualifiers are necessary beyond those applied due to associated blanks.

#### **Data Qualifier Definitions:**

- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- UB The analyte was detected, but was <5 times the level in an associated blank and was therefore qualified as not detected.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R (Not used) The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

#### **Laboratory Qualifier Definitions:**

- Cx Co-elutes with indicated congener. Data is provided under the lowest IUPAC designated congener in the group. "X" denotes the IUPAC number of the lowest congener.
- K Could not be confirmed.
- U Not detected.



1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.
2. Blanks – Acceptable. The laboratory blank contained 80 pg/L of total PCBs. This is slightly low, but significant relative to the field samples. Data were both blank-corrected and qualified in Excel data summaries.
3. Surrogates – Acceptable. The laboratory noted that several C-13 labeled surrogates were below method criteria in both field samples. Because the surrogate recoveries were in a range that Axys does not believe effects the sample results, no action was taken.

4. Matrix Spike – Acceptable. Recoveries ranged from 92-109%.
5. Reporting Limits – Acceptable.
6. Notes – The laboratory noted that this issues discussed above relative to surrogate recoveries are not believe to effect the sample results. It was also noted that the laboratory blanks was analyzed twice because contamination due to carryover was suspected. The results of the re-analysis are reported and no results are effected.

#### *Overall Assessment of Data*

The completeness of Axy's Analytical workgroup number WG10490 is 100%. The usefulness of this data is based on USEPA guidance documents. Upon consideration of the information presented above, the data are acceptable and no flags or qualifiers are necessary beyond those applied due to the associated blanks.

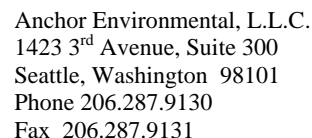
#### **Data Qualifier Definitions:**

- |    |   |
|----|---|
| U  | The analyte was analyzed for, but was not detected above the reported sample quantitation limit.  |
| UB | The analyte was detected, but was <5 times the level in an associated blank and was therefore qualified as not detected.  |
| J  | The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.  |
| UJ | The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. |
| R  | (Not used) The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.   |

#### **Laboratory Qualifier Definitions:**

- |    |   |
|----|---|
| Cx | Co-elutes with indicated congener. Data is provided under the lowest IUPAC designated congener in the group. "X" denotes the IUPAC number of the lowest congener. |
| K  | Could not be confirmed.   |
| U  | Not detected.   |





<b>To:</b>	Project File	<b>Info:</b>	Draft
<b>From:</b>	James Keithly, Chemist	<b>Date:</b>	March 2004
<b>RE:</b>	Summary Data Quality Review Upriver Dam RI – Water Data Axy's Analytical Services No. WG10490		

The laboratory provided a complete data report containing sample results and associated QA/QC data. The following samples are associated with Axys Analytical Services workgroup No: WG10490.

<u>COC Sample ID</u>	<u>Type</u>	<u>Requested Analyses</u>
AN-12SW-030902	Field	PCB congeners

Data validation is based on method performance criteria and QC criteria as documented in the Sampling and Analysis Plan (SAP). If criteria were not available in this document, method criteria or the laboratories' current criteria were used to evaluate the data. This abbreviated data review included a review of summarized sample results and QA/QC data per the requirements set forth in the QAPP. Holding times, method blanks, laboratory control sample results, laboratory duplicate results, field duplicate results, and reporting limits were reviewed to assess compliance with applicable methods and the QAPP. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA documents *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review* and using *EPA Region 10 SOP for Validation of Method 1668 Toxic, Dioxin-like, PCB Data*.

Samples were analyzed for PCB congeners by the EPA Method 1668.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.
2. Blanks – Acceptable. The laboratory blank contained 80 pg/L of total PCBs. This is slightly low, but significant relative to the field samples. Data were both blank-corrected and qualified in Excel data summaries.
3. Surrogates – Acceptable. The laboratory noted that several C-13 labeled surrogates were below method criteria in this sample. Because the surrogate recoveries were in a range that Axy's does not believe effects the sample results, no action was taken.

4. Matrix Spike – Acceptable. Recoveries ranged from 92-109%.
5. Reporting Limits – Acceptable.
6. Notes – The laboratory noted that this issues discussed above relative to surrogate recoveries are not believe to effect the sample results. It was also noted that the laboratory blanks was analyzed twice because contamination due to carryover was suspected. The results of the re-analysis are reported and no results are effected.

#### *Overall Assessment of Data*

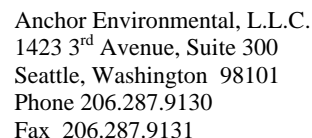
The completeness of Axy's Analytical WG10490 is 100%. The usefulness of this data is based on USEPA guidance documents. Upon consideration of the information presented above, the data are acceptable and no flags or qualifiers are necessary beyond those applied due to the associated blanks.

#### **Data Qualifier Definitions:**

- |    |   |
|----|---|
| U  | The analyte was analyzed for, but was not detected above the reported sample quantitation limit.  |
| UB | The analyte was detected, but was <5 times the level in an associated blank and was therefore qualified as not detected.  |
| J  | The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.  |
| UJ | The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. |
| R  | (Not used) The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.   |

#### **Laboratory Qualifier Definitions:**

- |    |   |
|----|---|
| Cx | Co-elutes with indicated congener. Data is provided under the lowest IUPAC designated congener in the group. "X" denotes the IUPAC number of the lowest congener. |
| K  | Could not be confirmed.   |
| U  | Not detected.   |



<b>To:</b>	Project File	<b>Info:</b>	Draft
<b>From:</b>	James Keithly, Chemist	<b>Date:</b>	March 2004
<b>RE:</b>	Summary Data Quality Review Upriver Dam RI – Water Data Axy's Analytical Services No. WG10490		

The laboratory provided a complete data report containing sample results and associated QA/QC data. The following samples are associated with Axys Analytical Services workgroup No: WG10490.

<u>COC Sample ID</u>	<u>Type</u>	<u>Requested Analyses</u>
AN-01LPA	Field	PCB congeners
AN-02LPA	Field	PCB congeners
AN-03LPA	Field	PCB congeners

Data validation is based on method performance criteria and QC criteria as documented in the Sampling and Analysis Plan (SAP). If criteria were not available in this document, method criteria or the laboratories' current criteria were used to evaluate the data. This abbreviated data review included a review of summarized sample results and QA/QC data per the requirements set forth in the QAPP. Holding times, method blanks, laboratory control sample results, laboratory duplicate results, field duplicate results, and reporting limits were reviewed to assess compliance with applicable methods and the QAPP. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA documents *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review* and using *EPA Region 10 SOP for Validation of Method 1668Toxic, Dioxin-like, PCB Data*.

Samples were analyzed for PCB congeners by the EPA Method 1668.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.
2. Blanks – Acceptable. The laboratory blank contained 80 pg of total PCBs. However, the levels reported for the “day zero” SPMD dialysis blank were substantially higher and were in the same range as the samples. Data were both blank-corrected and qualified in Excel data summaries (application of UB qualifier).
3. Surrogates – Acceptable.
4. Matrix Spike – Acceptable. Recoveries ranged from 92-109%.
5. Reporting Limits – Acceptable.

6. Notes – The laboratory noted that the laboratory blank was analyzed twice because contamination due to carryover was suspected. The results of the re-analysis are reported and no results are effected. There were also two other minor instances (power failure, etc) that resulted in re-analyses for reason not related to analytical issues.

#### *Overall Assessment of Data*

The completeness of Axys Analytical WG10490 is 100%. The usefulness of this data is based on USEPA guidance documents. Upon consideration of the information presented above, the data are acceptable and no flags or qualifiers are necessary beyond those applied due to associated blanks.

#### **Data Qualifier Definitions:**

- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- UB The analyte was detected, but was <5 times the level in an associated blank and was therefore qualified as not detected.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R (Not used) The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

#### **Laboratory Qualifier Definitions:**

- Cx Co-elutes with indicated congener. Data is provided under the lowest IUPAC designated congener in the group. "X" denotes the IUPAC number of the lowest congener.
- K Could not be confirmed.
- U Not detected.

---

<b>To:</b>	Project File	<b>Info:</b>	Draft
<b>From:</b>	James Keithly, Chemist	<b>Date:</b>	March 2004
<b>RE:</b>	Summary Data Quality Review Upriver Dam RI – Water Data Alys Analytical Services No. WG10490		

---

This memo is a summary data quality review of 3 SPMD extracts. The samples were submitted to Alys Analytical Services in Sydney, British Columbia and were analyzed for PCB congeners by EPA Method 1668A.

The laboratory provided a complete data report containing sample results and associated QA/QC data. The following samples are associated with Alys Analytical Services workgroup No: WG10490.

**Table 1. Sample IDs, Type and Analyses**

<u>COC Sample ID</u>	<u>Type</u>	<u>Requested Analyses</u>
AN-12-LPA	Field	PCB congeners

Upon receipt by Alys, the sample jar information was compared to the chain-of-custody (COC). Discrepancies were noted by Alys and addressed with Anchor personnel prior to sample analyses. The cooler temperatures were recorded as part of the check-in procedure. The extracts are not shipped on ice since they are in sealed glass ampules. Samples were received at 18°C.

Data validation is based on method performance criteria and QC criteria as documented in the Sampling and Analysis Plan (SAP). If criteria were not available in this document, method criteria or the laboratories' current criteria were used to evaluate the data. This abbreviated data review included a review of summarized sample results and QA/QC data per the requirements set forth in the QAPP. Holding times, method blanks, laboratory control sample results, laboratory duplicate results, field duplicate results, and reporting limits were reviewed to assess compliance with applicable methods and the QAPP. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA documents *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review* and using *EPA Region 10 SOP for Validation of Method 1668 Toxic, Dioxin-like, PCB Data*.

#### *PCB Congeners*

Samples were analyzed for PCB congeners by the EPA Method 1668.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.
2. Blanks – Acceptable. The laboratory blank contained 80 pg of total PCBs. However, the levels reported for the “day zero” SPMD dialysis blank were substantially higher and were in the same range as the samples. Data were both blank-corrected and qualified in Excel data summaries (application of UB qualifier).
3. Surrogates – Acceptable. Recovery issues were associated with the laboratory blank, but do not effect the sample results.
4. Matrix Spike – Acceptable. Recoveries ranged from 92-109%.
5. Reporting Limits – Acceptable.

6. Notes – The laboratory noted that the laboratory blank was analyzed twice because contamination due to carryover was suspected. The results of the re-analysis are reported and no results are effected.

*Overall Assessment of Data*

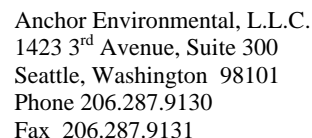
The completeness of Axys Analytical WG10490 is 100%. The usefulness of this data is based on USEPA guidance documents. Upon consideration of the information presented above, the data are acceptable and no flags or qualifiers are necessary beyond those applied due to associated blanks.

**Data Qualifier Definitions:**

- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- UB The analyte was detected, but was <5 times the level in an associated blank and was therefore qualified as not detected.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R (Not used) The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

**Laboratory Qualifier Definitions:**

- Cx Co-elutes with indicated congener. Data is provided under the lowest IUPAC designated congener in the group. "X" denotes the IUPAC number of the lowest congener.
- K Could not be confirmed.
- U Not detected.



<b>To:</b>	Project File	<b>Info:</b>	Draft
<b>From:</b>	James Keithly, Chemist	<b>Date:</b>	March 2004
<b>RE:</b>	Summary Data Quality Review Upriver Dam RI – Water Data Axy's Analytical Services No. WG10590		

The laboratory provided a complete data report containing sample results and associated QA/QC data. The following samples are associated with Axys Analytical Services workgroup No: WG10590.

<u>COC Sample ID</u>	<u>Type</u>	<u>Requested Analyses</u>
Tubing Proof	Equipment Blank	PCB congeners

### PCB Congeners

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.
2. Blanks – Acceptable. The laboratory blank contained 45 pg/L of total PCBs and the tubing proof contained 116 pg/L of PCBs. This is in the same range as the field samples. Data were both blank-corrected and qualified in Excel data summaries (application of UB qualifier).
3. Surrogates – Acceptable. The laboratory did not note any recoveries of C-13 labeled congeners that fell outside limits.
4. Matrix Spike – Acceptable. Recoveries ranged from 90-105%.
5. Reporting Limits – Acceptable.
6. Notes – The laboratory noted no analytical issues with these samples.

### *Overall Assessment of Data*

The completeness of Axys Analytical WG10590 is 100%. The usefulness of this data is based on USEPA guidance documents. Upon consideration of the information presented above, the data are acceptable and no flags or qualifiers are necessary.

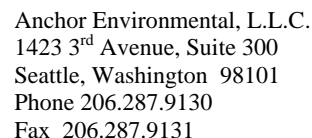
### **Data Qualifier Definitions:**

- U      The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- UB     The analyte was detected, but was <5 times the level in an associated blank and was therefore qualified as not detected.
- J      The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ     The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R      (Not used) The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

### **Laboratory Qualifier Definitions:**

- Cx     Co-elutes with indicated congener. Data is provided under the lowest IUPAC designated congener in the group. "X" denotes the IUPAC number of the lowest congener.
- K      Could not be confirmed.
- U      Not detected.





<b>To:</b>	Project File	<b>Info:</b>	Draft
<b>From:</b>	James Keithly, Chemist	<b>Date:</b>	March 2004
<b>RE:</b>	Summary Data Quality Review Upriver Dam RI – Water Data Axy's Analytical Services No. WG10754		

The laboratory provided a complete data report containing sample results and associated QA/QC data. The following samples are associated with Axys Analytical Services workgroup No: WG10754.

<u>COC Sample ID</u>	<u>Type</u>	<u>Requested Analyses</u>
Day Zero	SPMD Blank	PCB congeners
Trip Blank	SPMD Trip Blank	PCB congeners

Data validation is based on method performance criteria and QC criteria as documented in the Sampling and Analysis Plan (SAP). If criteria were not available in this document, method criteria or the laboratories' current criteria were used to evaluate the data. This abbreviated data review included a review of summarized sample results and QA/QC data per the requirements set forth in the QAPP. Holding times, method blanks, laboratory control sample results, laboratory duplicate results, field duplicate results, and reporting limits were reviewed to assess compliance with applicable methods and the QAPP. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA documents *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review* and using *EPA Region 10 SOP for Validation of Method 1668 Toxic, Dioxin-like, PCB Data*.

Samples were analyzed for PCB congeners by the EPA Method 1668.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.
2. Blanks – Acceptable. The laboratory blank contained 13 pg of total PCBs. However, the levels reported for the “day zero” SPMD dialysis blank were substantially higher (5540 and 4980 pg) and were in the same range as the samples. Data were both blank-corrected and qualified in Excel data summaries (application of UB qualifier).
3. Surrogates – Acceptable.
4. Matrix Spike – Acceptable. Recoveries ranged from 84-103%.
5. Reporting Limits – Acceptable.

6. Notes – The laboratory noted no significant issues with these analyses.

*Overall Assessment of Data*

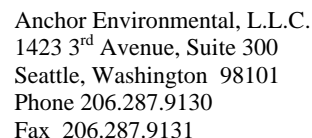
The completeness of Axys Analytical WG10754 is 100%. The usefulness of this data is based on USEPA guidance documents. Upon consideration of the information presented above, the data are acceptable and no flags or qualifiers are necessary beyond those applied due to associated blanks.

**Data Qualifier Definitions:**

- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- UB The analyte was detected, but was <5 times the level in an associated blank and was therefore qualified as not detected.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R (Not used) The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

**Laboratory Qualifier Definitions:**

- Cx Co-elutes with indicated congener. Data is provided under the lowest IUPAC designated congener in the group. "X" denotes the IUPAC number of the lowest congener.
- K Could not be confirmed.
- U Not detected.



<b>To:</b>	Project File	<b>Info:</b>	Draft
<b>From:</b>	James Keithly, Chemist	<b>Date:</b>	March 2004
<b>RE:</b>	Summary Data Quality Review Upriver Dam RI – Water Data Axy's Analytical Services No. WG10754		

The laboratory provided a complete data report containing sample results and associated QA/QC data. The following samples are associated with Axys Analytical Services workgroup No: WG10754.

<u>COC Sample ID</u>	<u>Type</u>	<u>Requested Analyses</u>
AN-11-LPA	Field	PCB congeners
AN-13-LPA	Field	PCB congeners
AN-14-LPA	Field	PCB congeners

Data validation is based on method performance criteria and QC criteria as documented in the Sampling and Analysis Plan (SAP). If criteria were not available in this document, method criteria or the laboratories' current criteria were used to evaluate the data. This abbreviated data review included a review of summarized sample results and QA/QC data per the requirements set forth in the QAPP. Holding times, method blanks, laboratory control sample results, laboratory duplicate results, field duplicate results, and reporting limits were reviewed to assess compliance with applicable methods and the QAPP. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA documents *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review* and using *EPA Region 10 SOP for Validation of Method 1668Toxic, Dioxin-like, PCB Data*.

Samples were analyzed for PCB congeners by the EPA Method 1668.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.
2. Blanks – Acceptable. The laboratory blank contained 13 pg of total PCBs. However, the levels reported for the “day zero” SPMD dialysis blank were substantially higher and were in the same range as the samples. Data were both blank-corrected and qualified in Excel data summaries (application of UB qualifier).
3. Surrogates – Acceptable.
4. Matrix Spike – Acceptable. Recoveries ranged from 85-103%.

5. Reporting Limits – Acceptable.
6. Notes – The laboratory noted no significant issues with these analyses.

*Overall Assessment of Data*

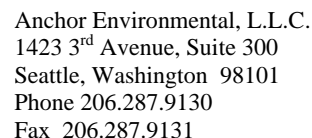
The completeness of Axys Analytical WG10754 is 100%. The usefulness of this data is based on USEPA guidance documents. Upon consideration of the information presented above, the data are acceptable and no flags or qualifiers are necessary beyond those applied due to associated blanks.

**Data Qualifier Definitions:**

- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- UB The analyte was detected, but was <5 times the level in an associated blank and was therefore qualified as not detected.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R (Not used) The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

**Laboratory Qualifier Definitions:**

- Cx Co-elutes with indicated congener. Data is provided under the lowest IUPAC designated congener in the group. "X" denotes the IUPAC number of the lowest congener.
- K Could not be confirmed.
- U Not detected.



<b>To:</b>	Project File	<b>Info:</b>	Draft
<b>From:</b>	James Keithly, Chemist	<b>Date:</b>	March 2004
<b>RE:</b>	Summary Data Quality Review Upriver Dam RI – Water Data Columbia Analytical Services Nos: K2304404 & K2303705		

The laboratory provided a complete data report containing sample results and associated QA/QC data. The following samples are associated with CAS service request numbers K2304404 and K2303705.

<u>COC Sample ID</u>	<u>Type</u>	<u>Requested Analyses</u>
AN-D14GW-030515	Field	TSS
AN-D16GW-030515	Field	TSS
AN-EWGW-030612	Field	TSS

Data validation is based on method performance criteria and QC criteria as documented in the Sampling and Analysis Plan (SAP). If criteria were not available in this document, method criteria or the laboratories' current criteria were used to evaluate the data. This abbreviated data review included a review of summarized sample results and QA/QC data per the requirements set forth in the QAPP. Holding times, method blanks, laboratory control sample results, laboratory duplicate results, field duplicate results, and reporting limits were reviewed to assess compliance with applicable methods and the QAPP. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA documents *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Data Review*. July 2002.

Samples were analyzed for TSS by the EPA Method 160.2.

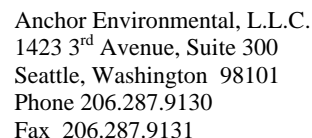
1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.
2. Blanks – Acceptable. Blanks contained non-detectable levels of TSS.
3. Laboratory Duplicates – Acceptable. When TSS was detected in duplicated samples, duplicate RPDs were low (8%).
4. Laboratory Control Samples (LCS or Blank Spike) – Acceptable. Recoveries ranged from 88-92%.
5. Reporting Limits – Acceptable.

*Overall Assessment of Data*

The completeness of CAS Service Requests K2304404 AND K2303705 is 100%. The usefulness of this data is based on USEPA guidance documents. Upon consideration of the information presented above, the data are acceptable and no flags or qualifiers are necessary.

**Data Qualifier Definitions:**

- U      The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J      The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ     The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R      (Not used) The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.



1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.
2. Blanks – Acceptable. Blanks contained non-detectable levels
3. Laboratory Duplicates – Acceptable. Duplicate RPDs were <1%, when organic carbon was detectable.
4. Laboratory Control Samples (LCS or Blank Spike) – Acceptable. Recovery was 94%.

5. Matrix Spike – Acceptable. Recoveries ranged from 96-101%.

6. Reporting Limits – Acceptable.

#### *Turbidity*

Samples were analyzed for Turbidity by the EPA Method 180.1.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.

2. Blanks – Acceptable. Blanks contained non-detectable levels

3. Laboratory Duplicates - Acceptable. Duplicate relative percent differences were <1%.

4. Laboratory Control Samples (LCS or Blank Spike) – Acceptable. Recovery was 94%.

5. Reporting Limits – Acceptable.

#### *TSS*

Samples were analyzed for TSS by the EPA Method 160.2.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.

2. Blanks – Acceptable. Blanks contained non-detectable levels of TSS.

3. Laboratory Duplicates – Acceptable. The sample duplicated did not contain detectable TSS and duplicate RPDs could not be calculated.

4. Laboratory Control Samples (LCS or Blank Spike) – Acceptable. Recovery was 95%.

5. Reporting Limits – Acceptable

#### *pH*

Samples were analyzed for pH by the EPA Method 150.1.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.

2. Laboratory Duplicates – Acceptable. Duplicate relative percent differences were <1%.

3. Laboratory Control Samples (LCS or Blank Spike) – Acceptable. Recovery was 100%.

#### *Conductivity*

Samples were analyzed for TSS by the EPA Method 160.2.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.

2. Blanks – Acceptable. Blanks contained non-detectable conductivity.

3. Laboratory Duplicates – Acceptable. Relative percent difference was <1%.

4. Laboratory Control Samples (LCS or Blank Spike) – Acceptable. Recovery was 94%.



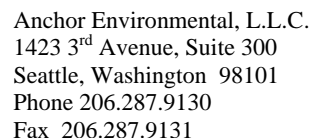
5. Reporting Limits – Acceptable

*Overall Assessment of Data*

The completeness of CAS Service Requests K2306740 is 100%. The usefulness of this data is based on USEPA guidance documents. Upon consideration of the information presented above, the data are acceptable and no flags or qualifiers are necessary.

**Data Qualifier Definitions:**

- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R (Not used) The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.



<b>To:</b>	Project File	<b>Info:</b>	Draft
<b>From:</b>	James Keithly, Chemist	<b>Date:</b>	March 2004
<b>RE:</b>	Summary Data Quality Review Upriver Dam RI – Water Data Columbia Analytical Services No. K2306814		

The laboratory provided a complete data report containing sample results and associated QA/QC data. The following samples are associated with CAS service request numbers K2306814.

<u>COC Sample ID</u>	<u>Type</u>	<u>Requested Analyses</u>
AN-D16GW-090403	Field	TSS
AN-EWGW-090403	Field	TSS

Data validation is based on method performance criteria and QC criteria as documented in the Sampling and Analysis Plan (SAP). If criteria were not available in this document, method criteria or the laboratories' current criteria were used to evaluate the data. This abbreviated data review included a review of summarized sample results and QA/QC data per the requirements set forth in the QAPP. Holding times, method blanks, laboratory control sample results, laboratory duplicate results, field duplicate results, and reporting limits were reviewed to assess compliance with applicable methods and the QAPP. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA documents *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Data Review*, July 2002.

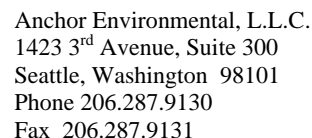
1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.
2. Blanks – Acceptable. Blanks contained non-detectable levels of TSS.
3. Laboratory Duplicates – Acceptable. The sample duplicated did not contain detectable TSS and duplicate RPDs could not be calculated.
4. Laboratory Control Samples (LCS or Blank Spike) – Acceptable. Recovery was 98%.
5. Reporting Limits – Acceptable

*Overall Assessment of Data*

The completeness of CAS Service Requests K2306814 is 100%. The usefulness of this data is based on USEPA guidance documents. Upon consideration of the information presented above, the data are acceptable and no flags or qualifiers are necessary.

**Data Qualifier Definitions:**

- U      The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J      The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ     The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R      (Not used) The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.



<b>To:</b>	Project File	<b>Info:</b>	Draft
<b>From:</b>	James Keithly, Chemist	<b>Date:</b>	March 2004
<b>RE:</b>	Summary Data Quality Review Upriver Dam RI – Sediment Data Columbia Analytical Services No: K2306866		

This memo is a summary data quality review of 11 primary sediment samples and two field duplicates collected between September 3 and September 6, 2003. The samples were submitted to Columbia Analytical Services, Inc., (CAS) a Washington State Department of Ecology (Ecology) accredited laboratory located in Kelso, Washington. Samples were analyzed for total organic carbon (TOC) and grain size by Puget Sound Estuary Program (PSEP) methods, polychlorinated biphenyls (PCBs) by EPA Method 8082, and total solids (TS) by EPA 160.3. The analyses were performed in general accordance with methods specified in EPA's *Test Methods for Evaluating Solid Waste (SW-846)*, January 1995 and associated revisions, and the PSEP Protocols (PSEP 1997).

The laboratory provided a complete data report containing sample results and associated QA/QC data. The following samples are associated with CAS service request number K2306866.

**Table 1. Sample IDs, Matrix and Analyses**

<u>COC Sample ID</u>	<u>Type</u>	<u>Requested Analyses</u>
BWE-9	Field Sample	Grain size, TOC, TS, PCBs
AN-10SD-A	Field Sample	Grain size, TOC, TS, PCBs
AN-11SD-A	Field Sample	Grain size, TOC, TS, PCBs
AN-61SD-A	Field Duplicate (11-A)	Grain size, TOC, TS, PCBs
AN-11SD-B	Field Sample	Grain size, TOC, TS, PCBs
AN-11SD-C	Field Sample	Grain size, TOC, TS, PCBs
AN-11SD-D	Field Sample	Grain size, TOC, TS, PCBs
AN-11SD-E	Field Sample	Grain size, TOC, TS, PCBs
AN-12SD-A	Field Sample	Grain size, TOC, TS, PCBs
AN-13SD-A	Field Sample	Grain size, TOC, TS, PCBs
AN-14SD-A	Field Sample	Grain size, TOC, TS, PCBs
AN-15SD-A	Field Sample	Grain size, TOC, TS, PCBs
AN-70SD-A	Field Duplicate (20-A)	Grain size, TOC, TS, PCBs

Upon receipt by CAS, the sample jar information was compared to the chain-of-custody (COC). Discrepancies were noted by CAS and addressed with Anchor personnel prior to sample analyses. The cooler temperatures were recorded as part of the check-in procedure. All coolers were received with acceptable temperatures (4°C +/- 2°C).

Data validation is based on method performance criteria and QC criteria as documented in the Sampling and Analysis Plan (SAP). If criteria were not available in this document, method criteria or the laboratories' current criteria were used to evaluate the data. This data review included a review of summarized sample results and QA/QC data per the requirements set forth in the QAPP. Holding times, method blanks, surrogate recoveries, laboratory control sample results, laboratory duplicate results, field duplicate results, matrix spike/matrix spike duplicate (MS/MSD) results, and reporting limits were reviewed to assess compliance with applicable methods and the QAPP. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA documents *USEPA Contract Laboratory Program (CLP) National Functional Guidelines*

*for Organic Data Review, October 1999 and USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Data Review, July 2002.*

#### *PCBs*

Samples were analyzed for PCBs by the EPA Method 8082.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.
2. Blanks – Acceptable. Blanks contained non-detectable levels of target chemicals.
3. Surrogates – Acceptable. All recoveries of the surrogate used (decachlorobiphenyl) were acceptable (79-95% recovery).
4. Laboratory Control Samples (LCS or Blank Spike) – Acceptable. Recoveries ranged from 88-102%.
5. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable. Recoveries ranged from 101-117% and relative percent differences were low 1-2%.
6. Field Duplicates – Acceptable. PCBs were either not-detected or detected at very low levels (<5 times detection limits) in these samples. Criteria for duplicate samples are not applicable in this range.
7. Reporting Limits – Acceptable. Elevated detection limits were noted for samples AN-10SD-A and AN-11SD-E due to non-target compounds present in the samples.
8. Notes – The laboratory noted a weathered PCB pattern and selected PCB 1248 as the best match for these samples.

#### *TOC*

Samples were analyzed for using PSEP methodology as identified in the introduction to this report.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.
2. Blanks – Acceptable. Blanks contained non-detectable levels organic carbon.
3. Laboratory Control Samples (LCS or Blank Spike) – Acceptable. Recovery was 104%.
4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable. Recovery was 96%.
5. Laboratory Duplicates/Triplicates – TOC has low RPD (7%) for the duplicate and a low RSD (8%) for the triplicate analysis
6. Field Duplicates – Acceptable. TOC was detected at very low levels (<5 times detection limits) in these samples. Criteria for duplicate samples are not applicable in this range.
7. Reporting Limits – Acceptable.
8. Notes – None.

#### *Grain Size Analyses*

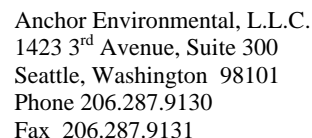
The laboratory noted that samples BWE-9 and AN-11SD-E contained wood and other plant matter. These materials do not conform to the model from which the grain size method is derived and interfere with this determination. Specifically, the silt fraction may be biased high because wood and organic matter floats during this determination.

*Overall Assessment of Data*

The completeness of CAS Service Request K2306866 is 100%. The usefulness of this data is based on USEPA guidance documents. Upon consideration of the information presented above, the data are acceptable and no flags or qualifiers are necessary.

**Data Qualifier Definitions:**

- U      The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J      The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ     The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R      (Not used) The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.



<b>To:</b>	Project File	<b>Info:</b>	Draft
<b>From:</b>	James Keithly, Chemist	<b>Date:</b>	March 2004
<b>RE:</b>	Summary Data Quality Review Upriver Dam RI – Sediment Data Columbia Analytical Services No: K2306871		

This memo is a summary data quality review of 17 primary sediment samples, one field duplicate, and three field blanks collected between September 3 and September 6, 2003. The samples were submitted to Columbia Analytical Services, Inc., (CAS) a Washington State Department of Ecology (Ecology) accredited laboratory located in Kelso, Washington. Samples were analyzed for total organic carbon (TOC) and grain size by Puget Sound Estuary Program (PSEP) methods, polychlorinated biphenyls (PCBs) by EPA Method 8082, and total solids (TS) by EPA 160.3. The analyses were performed in general accordance with methods specified in EPA's *Test Methods for Evaluating Solid Waste (SW-846)*, January 1995 and associated revisions, and the PSEP Protocols (PSEP 1997).

The laboratory provided a complete data report containing sample results and associated QA/QC data. The following samples are associated with CAS service request number K2306871.

**Table 1. Sample IDs, Matrix and Analyses**

<u>COC Sample ID</u>	<u>Type</u>	<u>Requested Analyses</u>
AN-20SD-A	Field Sample	Grain size, TS
AN-21SD-A	Field Sample	Grain size, TS
AN-22SD-A	Field Sample	Grain size, TS
AN-23SD-A	Field Sample	Grain size, TS
AN-24SD-A	Field Sample	Grain size, TS
AN-25SD-A	Field Sample	Grain size, TS, TOC, PCBs
AN-26SD-A	Field Sample	Grain size, TS, TOC, PCBs
AN-27SD-A	Field Sample	Grain size, TS
AN-28SD-A	Field Sample	Grain size, TS
AN-29SD-A	Field Sample	Grain size, TS
AN-30SD-A	Field Sample	Grain size, TS
AN-31SD-A	Field Sample	Grain size, TS
AN-81SD-A	Field Duplicate (31-A)	Grain size, TS
AN-32SD-A	Field Sample	Grain size, TS
AN-40SD-A	Field Sample	Grain size, TS, TOC, PCBs
AN-40SD-B	Field Sample	Grain size, TS, TOC, PCBs
AN-41SD-A	Field Sample	Grain size, TS, TOC, PCBs
AN-42SD-A	Field Sample	Grain size, TS, TOC, PCBs
AN-XXFB	Field Blank	Not Analyzed (background)
AN-20FB	Field Blank	Not Analyzed (van Veen wipe)
AN-11FB	Field Blank	Not Analyzed (core wipe)

Upon receipt by CAS, the sample jar information was compared to the chain-of-custody (COC). Discrepancies were noted by CAS and addressed with Anchor personnel prior to sample analyses. The cooler temperatures were recorded as part of the check-in procedure. All coolers were received with acceptable temperatures (4°C +/- 2°C).

Data validation is based on method performance criteria and QC criteria as documented in the Sampling and Analysis Plan (SAP). If criteria were not available in this document, method criteria or the laboratories' current criteria were used to evaluate the data. This data review included a review of summarized sample results and QA/QC data per the requirements set forth in the QAPP. Holding times, method blanks, surrogate recoveries, laboratory control sample results, laboratory duplicate results, field duplicate results, matrix spike/matrix spike duplicate (MS/MSD) results, and reporting limits were reviewed to assess compliance with applicable methods and the QAPP. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA documents *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review*, October 1999 and *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Data Review*, July 2002.

#### *PCBs*

Samples were analyzed for PCBs by the EPA Method 8082.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.
2. Blanks – Acceptable. Blanks contained non-detectable levels of target chemicals.
3. Surrogates – Acceptable. All recoveries of the surrogate used (decachlorobiphenyl) were acceptable (85-95% recovery).
4. Laboratory Control Samples (LCS or Blank Spike) – Acceptable. Recoveries ranged from 88-102%.
5. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable. Recoveries ranged from 101-117% and relative percent differences were low (1-2%).
6. Field Duplicates – Acceptable. PCBs were either not-detected or detected at very low levels (<5 times detection limits) in these samples. Criteria for duplicate samples are not applicable in this range.
7. Reporting Limits – Acceptable.
8. Notes – The laboratory noted a weathered PCB pattern and selected PCB 1248 as the best match for these samples.

#### *TOC*

Samples were analyzed for using PSEP methodology as identified in the introduction to this report.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.
2. Blanks – Acceptable. Blanks contained non-detectable levels organic carbon.
3. Laboratory Control Samples (LCS or Blank Spike) – Acceptable. Recovery was 104%.
4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable. Recovery was 96%.
5. Laboratory Duplicates/Triplicates – TOC has low RPD (7%) for the duplicate and a low RSD (8%) for the triplicate analysis
6. Field Duplicates – Field duplicates were not analyzed in this batch.
7. Reporting Limits – Acceptable.
8. Notes – None.



### *Grain Size Analyses*

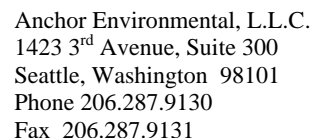
The laboratory noted that samples AN-25SD-A, AN-30SD-A, AN-40SD-A, AN-40SD-B, AN-41SD-A, and AN-42SD-A, contained wood and other plant matter. These materials do not conform to the model from which the grain size method is derived and interfere with this determination. Specifically, the silt fraction may be biased high because wood and organic matter floats during this determination.

### *Overall Assessment of Data*

The completeness of CAS Service Request K2306871 is 100%. The usefulness of this data is based on USEPA guidance documents. Upon consideration of the information presented above, the data are acceptable and no flags or qualifiers are necessary.

### **Data Qualifier Definitions:**

- |    |   |
|----|---|
| U  | The analyte was analyzed for, but was not detected above the reported sample quantitation limit.  |
| J  | The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.  |
| UJ | The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. |
| R  | (Not used) The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.   |



<b>To:</b>	Project File	<b>Info:</b>	Draft
<b>From:</b>	James Keithly, Chemist	<b>Date:</b>	March 2004
<b>RE:</b>	Summary Data Quality Review Upriver Dam RI – Sediment Data Columbia Analytical Services No: K2308487		

The laboratory provided a complete data report containing sample results and associated QA/QC data. The following samples are associated with CAS service request number K2308487.

<u>COC Sample ID</u>	<u>Type</u>	<u>Requested Analyses</u>
BWE-9	Field Sample	Retene
AN-10SD-A	Field Sample	Retene
AN-11SD-A	Field Sample	Retene
AN-61SD-A	Field Duplicate (11-A)	Retene
AN-11SD-C	Field Sample	Retene
AN-11SD-E	Field Sample	Retene
AN-12SD-A	Field Sample	Retene
AN-13SD-A	Field Sample	Retene
AN-14SD-A	Field Sample	Retene
AN-15SD-A	Field Sample	Retene
AN-25SD-A	Field Sample	Retene
AN-30SD-A	Field Sample	Retene
AN-40SD-A	Field Sample	Retene
AN-41SD-A	Field Sample	Retene

Data validation is based on method performance criteria and QC criteria as documented in the Sampling and Analysis Plan (SAP). If criteria were not available in this document, method criteria or the laboratories' current criteria were used to evaluate the data. This data review included a review of summarized sample results and QA/QC data per the requirements set forth in the QAPP. Holding times, method blanks, surrogate recoveries, laboratory control sample results, laboratory duplicate results, field duplicate results, matrix spike/matrix spike duplicate (MS/MSD) results, and reporting limits were reviewed to assess compliance with applicable methods and the QAPP. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA documents *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review*, October 1999.

*Retene*

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times (1 year when frozen at -20°C).
2. Blanks – Acceptable. Blanks contained non-detectable levels of target chemicals.
3. Surrogates / Internal Standards– Acceptable. Internal standard results (chrysene-d12) areas and retention times were within acceptable limits for all samples.
4. Laboratory Control Samples (LCS or Blank Spike) – Acceptable. Recoveries ranged from 84-88%.
5. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable. Recoveries ranged from 85-95% and relative percent differences were low (10%).
6. Field Duplicates – Acceptable. Retene was not detected in the parent or the field duplicate sample.
7. Reporting Limits – Acceptable.
8. Notes – None

*Overall Assessment of Data*

The completeness of CAS Service Request K2308487 is 100%. The usefulness of this data is based on USEPA guidance documents. Upon consideration of the information presented above, the data are acceptable and no flags or qualifiers are necessary.

**Data Qualifier Definitions:**

- |    |   |
|----|---|
| U  | The analyte was analyzed for, but was not detected above the reported sample quantitation limit.  |
| J  | The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.  |
| UJ | The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. |
| R  | (Not used) The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.   |

---

<b>To:</b>	Project File	<b>Info:</b>	Draft
<b>From:</b>	James Keithly, Chemist	<b>Date:</b>	March 2004
<b>RE:</b>	Summary Data Quality Review Upriver Dam RI – Sediment Data Columbia Analytical Services No: K2308487		

---

This memo is a summary data quality review of primary sediment samples and field duplicate collected between September 3 and September 6, 2003. The samples were submitted to Columbia Analytical Services, Inc., (CAS) a Washington State Department of Ecology (Ecology) accredited laboratory located in Kelso, Washington.

After review of other results (grain size, TOC, and PCBs) these samples were designated for the analyses listed in Table 1 (below). Samples were analyzed for total organic carbon (TOC), polychlorinated biphenyls (PCBs) by EPA Method 8082, Diesel and Residual Range Organics by NWTPN-HCID and NW-TPHDx, and semi-volatile organic compounds by EPAM Method 8270. The analyses were performed in general accordance with methods specified in EPA's *Test Methods for Evaluating Solid Waste (SW-846)*, January 1995 and associated revisions, Washington State Department of Ecology Methods, and the PSEP Protocols (PSEP 1997).

The laboratory provided a complete data report containing sample results and associated QA/QC data. The following samples are associated with CAS service request number K2308487.

**Table 1. Sample IDs, Matrix and Analyses**

<u>COC Sample ID</u>	<u>Type</u>	<u>Requested Analyses</u>
BWE-9	Field Sample	HCID, NWTPH-Dx, SVOCs
AN-10SD-A	Field Sample	HCID, SVOCs
AN-11SD-A	Field Sample	HCID, SVOCs
AN-61SD-A	Field Duplicate (11-A)	HCID, SVOCs
AN-11SD-B	Field Sample	TOC, PCBs
AN-11SD-C	Field Sample	TOC, PCBs, HCID, SVOCs
AN-11SD-D	Field Sample	TOC, PCBs
AN-11SD-E	Field Sample	HCID, NWTPH-Dx, SVOCs
AN-12SD-A	Field Sample	HCID, SVOCs
AN-13SD-A	Field Sample	HCID, SVOCs
AN-14SD-A	Field Sample	HCID, NWTPH-Dx, SVOCs
AN-15SD-A	Field Sample	HCID, SVOCs
AN-20SD-A	Field Sample	TOC, PCBs
AN-70SD-A	Field Duplicate (20-A)	TOC, PCBs
AN-21SD-A	Field Sample	TOC, PCBs
AN-22SD-A	Field Sample	TOC, PCBs
AN-23SD-A	Field Sample	TOC, PCBs
AN-24SD-A	Field Sample	TOC, PCBs
AN-25SD-A	Field Sample	HCID, NWTPH-Dx, SVOCs
AN-27SD-A	Field Sample	TOC, PCBs
AN-28SD-A	Field Sample	TOC, PCBs
AN-29SD-A	Field Sample	TOC, PCBs
AN-30SD-A	Field Sample	TOC, PCBs, HCID, SVOCs
AN-31SD-A	Field Sample	TOC, PCBs
AN-81SD-A	Field Duplicate (31-A)	TOC, PCBs

---

<u>COC Sample ID</u>	<u>Type</u>	<u>Requested Analyses</u>
AN-32SD-A	Field Sample	TOC, PCBs
AN-40SD-A	Field Sample	HCID, NWTPH-Dx, SVOCs
AN-41SD-A	Field Sample	HCID, SVOCs

Because these samples were received in September and these analyses were performed in December, sample receipt is not covered by this data package. This information was previously reviewed and no anomalies were noted. These samples were held frozen at -20°C prior to analysis.

Data validation is based on method performance criteria and QC criteria as documented in the Sampling and Analysis Plan (SAP). If criteria were not available in this document, method criteria or the laboratories' current criteria were used to evaluate the data. This data review included a review of summarized sample results and QA/QC data per the requirements set forth in the QAPP. Holding times, method blanks, surrogate recoveries, laboratory control sample results, laboratory duplicate results, field duplicate results, matrix spike/matrix spike duplicate (MS/MSD) results, and reporting limits were reviewed to assess compliance with applicable methods and the QAPP. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA documents *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review*, October 1999 and *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Data Review*, July 2002.

#### *PCBs*

Samples were analyzed for PCBs by the EPA Method 8082.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times (1 year for samples frozen at -20°C).
2. Blanks – Acceptable. Blanks contained non-detectable levels of target chemicals.
3. Surrogates – Acceptable. All recoveries of the surrogate used (decachlorobiphenyl) were acceptable (82-91% recovery).
4. Laboratory Control Samples (LCS or Blank Spike) – Acceptable. Recoveries ranged from 93-103%.
5. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable. Recoveries ranged from 102-107% and relative percent differences were low (2%).
6. Field Duplicates – Acceptable. Semivolatile chemicals were not-detected or detected at very low levels (<5 times detection limits) in these samples. Criteria for duplicate samples are not applicable in this range.
7. Reporting Limits – Acceptable.
8. Notes –None

#### *TOC*

Samples were analyzed for using PSEP methodology as identified in the introduction to this report.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times (1 year when frozen at -20°C).
2. Blanks – Acceptable. Blanks contained non-detectable levels organic carbon.
3. Laboratory Control Samples (LCS or Blank Spike) – Acceptable. Recovery was 89%.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable. Recovery was 94%.
5. Laboratory Duplicates/Triplicates – TOC has low RPD (11%) for the duplicate and a low RSD (13%) for the triplicate analysis.
6. Field Duplicates – The field duplicate analyzed (AN-70SD-A) had an acceptable relative percent difference (16%) from the parent sample despite the low levels of TOC measured (0.13%).
7. Reporting Limits – Acceptable.
8. Notes – None.

#### *Hydrocarbon Identification Scan*

Samples were analyzed for Hydrocarbon Identification by Washington State Department of Ecology Methods.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times (1 year for samples frozen at -20°C).
2. Blanks – Acceptable. Blanks contained non-detectable levels of target chemicals.
3. Surrogates – Acceptable. All recoveries of the surrogates used (o-Terphenyl, 4-bromofluorobenzene, and n-Triacontane) were acceptable (72-118% recovery).
4. Field Duplicates – Acceptable. Hydrocarbons were not-detected in these samples. Criteria for duplicate samples are not applicable in this range.
5. Reporting Limits – Acceptable.
6. Notes – The laboratory noted elevated detection limits for samples AN-15SD-A, AN-25SD-A, AN-40SD-A, AN-41SD-A, and BWE-9 due to low total solids.

#### *NWTPH-Diesel and Residual Range Organics*

Based upon the results of the Hydrocarbon Identification analysis samples were analyzed for NWTPH Diesel and Residual Range Organics by Washington State Department of Ecology Methods.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times (1 year for samples frozen at -20°C).
2. Blanks – Acceptable. Blanks contained non-detectable levels of target chemicals.
3. Surrogates – Acceptable. All recoveries of the surrogates used (o-terphenyl and n-Triacontane) were acceptable (82-110% recovery).
4. Laboratory Duplicate Analyses – Acceptable. Although in the same range as the detection limits, duplicate relative percent difference were acceptable (5-9% RPD).
5. Laboratory Control Samples (LCS or Blank Spike) – Acceptable. Recoveries ranged from 103-109%.
6. Field Duplicates – None analyzed because hydrocarbons were not detected during the HCID analysis.
7. Reporting Limits – Acceptable.

8. Notes – The laboratory noted elevated detection limits for samples AN-15SD-A, AN-25SD-A, AN-40SD-A, AN-41SD-A, and BWE-9 due to low total solids.

#### *SVOCs*

Samples were analyzed for SVOCs by the EPA Method 8270.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times (1 year for samples frozen at -20°C).
2. Blanks – Acceptable. Blanks contained non-detectable levels of target chemicals.
3. Surrogates – Acceptable. All recoveries of the surrogates used (phenol-d6, nitrobenzene-d5, 2-fluorobiphenyl, terphenyl-d14) were acceptable (28-144% recovery).
4. Laboratory Control Samples (LCS or Blank Spike) – Acceptable. Recoveries ranged from 33-130%.
5. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable. Recoveries ranged from 68-101% and relative percent differences were low (0-8%).
6. Field Duplicates – Acceptable. PCBs were either not-detected or detected at very low levels (<5 times detection limits) in these samples. Criteria for duplicate samples are not applicable in this range.
7. Reporting Limits – Acceptable.

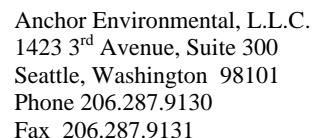
Notes – The laboratory noted a weathered PCB pattern and selected PCB 1248 as the best match for these samples

#### *Overall Assessment of Data*

The completeness of CAS Service Request K2308487 is 100%. The usefulness of this data is based on USEPA guidance documents. Upon consideration of the information presented above, the data are acceptable and no flags or qualifiers are necessary.

#### **Data Qualifier Definitions:**

- |    |   |
|----|---|
| U  | The analyte was analyzed for, but was not detected above the reported sample quantitation limit.  |
| J  | The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.  |
| UJ | The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. |
| R  | (Not used) The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.   |



<b>To:</b>	Project File	<b>Info:</b>	Draft
<b>From:</b>	James Keithly, Chemist	<b>Date:</b>	March 2004
<b>RE:</b>	Summary Data Quality Review Upriver Dam RI – Water Data Columbia Analytical Services No. K2310030		

The laboratory provided a complete data report containing sample results and associated QA/QC data. The following samples are associated with CAS service request numbers K2310030.

<u>COC Sample ID</u>	<u>Type</u>	<u>Requested Analyses</u>
AN-01A-031217	Field	TSS, TOC, DOC
AN-02A-031217	Field	TSS, TOC, DOC
AN-02A-031217	Field	TSS, TOC, DOC
AN-03A-031217	Field	TSS, TOC, DOC
AN-03B-031217	Field	TSS, TOC, DOC

Data validation is based on method performance criteria and QC criteria as documented in the Sampling and Analysis Plan (SAP). If criteria were not available in this document, method criteria or the laboratories' current criteria were used to evaluate the data. This abbreviated data review included a review of summarized sample results and QA/QC data per the requirements set forth in the QAPP. Holding times, method blanks, laboratory control sample results, laboratory duplicate results, field duplicate results, and reporting limits were reviewed to assess compliance with applicable methods and the QAPP. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA documents *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Data Review*, July 2002.

Samples were analyzed for TSS by the EPA Method 160.2.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.
2. Blanks – Acceptable. Blanks contained non-detectable levels
3. Laboratory Duplicates – Acceptable. Duplicate RPDs were <1% to 6%.
4. Laboratory Control Samples (LCS or Blank Spike) – Acceptable. Recovery was 103-104%.



5. Matrix Spike – Acceptable. Recoveries ranged from 106-107%.
6. Reporting Limits – Acceptable.

### *TSS*

Samples were analyzed for TSS by the EPA Method 160.2.

1. Holding Times – Acceptable. All samples were analyzed within applicable holding times.
2. Blanks – Acceptable. Blanks contained non-detectable levels of TSS.
3. Laboratory Duplicates – Acceptable. The sample duplicated did not contain detectable TSS and duplicate RPDs could not be calculated.
4. Laboratory Control Samples (LCS or Blank Spike) – Acceptable. Recovery was 98%.
5. Reporting Limits – Acceptable

### *Overall Assessment of Data*

The completeness of CAS Service Requests K2310030 is 100%. The usefulness of this data is based on USEPA guidance documents. Upon consideration of the information presented above, the data are acceptable and no flags or qualifiers are necessary.

### **Data Qualifier Definitions:**

- |    |   |
|----|---|
| U  | The analyte was analyzed for, but was not detected above the reported sample quantitation limit.  |
| J  | The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.  |
| UJ | The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. |
| R  | (Not used) The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.   |